

## AMENDMENT

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (currently amended) A method for optimizing a representation of a code sequence, comprising:

scanning the code sequence to determine a static frequency of operations performed in the code sequence;

~~performing a loop analysis to determine~~ determining an executed frequency of operations within multiple times executed loops for the code sequence; and

tuning an instruction set for assigning an op-code representation to an instruction,

wherein the tuning of the instruction set is based on the static frequency of operations and the executed frequency of operations.

2. (original) The method of claim 1, wherein the representation of a code sequence is a bit symbol representation.

3. (original) The method of claim 1, wherein the instruction set is a variable length instruction set.

4. (original) The method of claim 1, wherein the instruction set is a constant length instruction set.

5. (canceled)

6. (currently amended) The method of claim 1, wherein the ~~modification optimization of the op-code code sequence~~ may be executed by a ~~loadable microcode loadable from an external source~~.

7. (original) The method of claim 1, further comprising the step of providing a representation of operation frequency, which represents the frequency of operations performed.

8. (original) The method of claim 7, wherein the representation of operation frequency is a frequency distribution.

9. (original) The method of claim 8, wherein the frequency distribution is a histogram.

10. (original) The method of claim 1, wherein a more compact version of the code sequence is accomplished through shortening of bit symbol representation of an op-code of the instruction set.

11. (currently amended) A method for optimizing the representation of a code sequence, comprising:

determining the frequency of operations performed in the code sequence;

providing a plurality of pre-determined instruction sets with each pre-determined instruction set comprising instructions including assigned op-code representations,  
each pre-determined instruction set being optimized for a frequency of a particular operation;

selecting one of the plurality of predetermined instruction sets based on the determined frequency of operations performed.

12. (original) The method of claim 11, wherein the representation of a code sequence is a bit symbol representation.

13. (original) The method of claim 11, wherein the instruction set is a variable length instruction set.

14. (original) The method of claim 11, wherein the instruction set is a constant length instruction set.

15. (currently amended) The method of claim 11, wherein the step of determining operation frequency ~~may further include loop analysis comprising determining an executed frequency of operations within multiple times executed loops for the code sequence.~~

16. (currently amended) The method of claim 11, wherein the ~~modification optimization of the op-code code sequence~~ may be executed by a loadable microcode ~~loadable from an external source.~~

17. (previously presented) The method of claim 11, further comprising the step of providing a representation of operations frequency, which represents the frequency of operations performed.

18. (original) The method of claim 17, wherein the representation of operation frequency is a frequency distribution.

19. (original) The method of claim 18, wherein the frequency distribution is a histogram.

20. (original) The method of claim 11, wherein a more compact version of the code sequence is accomplished through shortening of bit symbol representation of an op-code of the instruction set.

21. (currently amended) A method for optimizing the representation of a code sequence, comprising:  
determining a frequency of use of a register based on scanning the code sequence to determine a static frequency of operations in the code sequence;  
modifying the ~~static~~ frequency of use of the register operations by performing a ~~loop analysis analyzing multiple time executed loops~~ to determine an executed frequency of operations in the register for said code sequence; and

tuning an instruction set for assigning a target-code representation for the register,

wherein the tuning of the instruction set is based on the frequency of use of the register,

wherein the tuning of the instruction set is based on the static frequency of operations and the executed frequency of operations for said register.

22. (original) The method of claim 21, wherein the representation of a code sequence is a bit symbol representation.

23. (original) The method of claim 21, wherein the instruction set is a variable length instruction set.

24. (original) The method of claim 21, wherein the instruction set is a constant length instruction set.

25. (canceled)

26. (currently amended) The method of claim 21, wherein the modification optimization of the op-code code sequence may be executed by a loadable microcode loadable from an external source.

27. (original) The method of claim 21, further comprising the step of providing a representation of operations frequency, which represents the frequency of operations performed.

28. (original) The method of claim 27, wherein the representation of operation frequency is a frequency distribution.

29. (original) The method of claim 28, wherein the frequency distribution is a histogram.

30. (original) A method for optimizing the representation of a code sequence, comprising:

    determining the frequency of use of one or more registers within a plurality of registers by the operations performed in the code sequence;

    limiting the use of one or more of the plurality of registers based on the frequency of use of one or more of the plurality of registers; and

    tuning the instruction set for assigning a target-code representation for one or more of the plurality of registers,

    wherein the tuning of the instruction set is based on the frequency of use of the plurality of registers.

31. (original) The method of claim 30, wherein the representation of a code sequence is a bit symbol representation.

32. (original) The method of claim 30, wherein the instruction set is a variable length instruction set.

33. (original) The method of claim 30, wherein the instruction set is a constant length instruction set.

34. (currently amended) The method of claim 30, wherein the step of determining operation frequency may further include loop analysis comprising determining an executed frequency of operations within multiple times executed loops for the code sequence

35. (currently amended) The method of claim 30, wherein the modification optimization of the op-code code sequence may be executed by a loadable microcode loadable from an external source.

36. (original) The method of claim 30, further comprising the step of providing a representation of operations frequency, which represents the frequency of operations performed.

37. (original) The method of claim 36, wherein the representation of operation frequency is a frequency distribution.

38. (original) The method of claim 37, wherein the frequency distribution is a histogram.

39. (currently amended) A computer readable medium upon which is stored computer readable code for optimizing a code sequence, wherein said computer readable code upon being executed on a computer causes steps comprising:

scanning the code sequence to determine a static frequency of operations in the code sequence; and

performing a loop analysis to determine determining an executed frequency of operations within multiple times executed loops for the code sequence: and

tuning an instruction set for assigning an op-code representation to an instruction,

wherein the tuning of the instruction set is based on the static frequency of operations and the executed frequency of operations.

40. (original) The computer readable medium of claim 39, wherein the representation of a code sequence is a bit symbol representation.

41. (original) The computer readable medium of claim 39, wherein the instruction set is a variable length instruction set.

42. (original) The computer readable medium of claim 39, wherein the instruction set is a constant length instruction set.

43. (canceled)

44. (currently amended) The computer readable medium of claim 39, wherein the modification optimization of the op-code code sequence may be executed by a loadable microcode loadable from an external source.

45. (original) The computer readable medium of claim 39, further comprising the step of providing a representation of operations frequency, which represents the frequency of operations performed.

46. (previously presented) The computer readable medium of claim 45, wherein the representation of operation frequency is a frequency distribution.

47. (previously presented) The computer readable medium of claim 46, wherein the frequency distribution is a histogram.

48. (currently amended) An optimized computing assembly, comprising:  
a processor coupled with a memory for executing programs; and  
an optimized code generator operationally coupled with the processor and the memory, the optimized code generator for scanning the a code sequence to determine a static frequency of operations in the code sequence, for performing a loop-analysis to determine determining an executed frequency of operations within multiple times executed loops for the code sequence, and for tuning an instruction set for by assigning an op-code representation selected according to the executed frequency of operations to an instruction,

wherein the tuning of the instruction set is based on the static frequency of operations and the executed frequency of operations.

49. (original) The optimized computing assembly of claim 48, wherein the representation of a code sequence is a bit symbol representation.

50. (original) The optimized computing assembly of claim 48, wherein the instruction set is a variable length instruction set.

51. (original) The optimized computing assembly of claim 48, wherein the instruction set is a constant length instruction set.

52. (canceled)

53. (currently amended) The optimized computing assembly of claim 48, wherein the ~~modification optimization of the op-code code sequence~~ may be executed by a loadable microcode loadable from an external source.

54. (original) The optimized computing assembly of claim 48, further comprising the step of providing a representation of operations frequency, which represents the frequency of operations performed.

55. (previously presented) The optimized computing assembly of claim 54, wherein the representation of operation frequency is a frequency distribution.

56. (previously presented) The optimized computing assembly of claim 55, wherein the frequency distribution is a histogram.

57. (currently amended) An optimized code generator for generating a source code stored on a computer readable medium and configured to be executed by a computer, comprising:

    a read executable for reading the source code;

    a translation executable operationally coupled with the read executable, the translation executable for translating the source code to an intermediate code;

    a scanning executable operationally coupled with the translation executable, the scanning executable for determining a static frequency of operations and an executed frequency of operations by analyzing loops performed by the source code and

providing a representation based on the static frequency of operations and the executed frequency of operations;

an optimizing translation executable operationally coupled with the scanning executable, the optimizing translation executable for translating the intermediate code to an object code including an optimized instruction set based on the determined static frequency of operations and the executed frequency of operations; and

a write executable operationally coupled with the optimizing translation executable, the write executable for outputting the an optimized object code.

58. (original) The optimized code generator of claim 57, comprising a compiler.

59. (original) The optimized code generator of claim 57, comprising an assembler.

60. (original) The optimized code generator of claim 57, wherein the instruction set is a variable length instruction set.

61. (original) The optimized code generator of claim 57, wherein the instruction set is a constant length instruction set.

62. (previously presented) The optimized code generator of claim 57, wherein the representation of operation frequency is a frequency distribution.

63. (previously presented) The optimized code generator of claim 62, wherein the frequency distribution is a histogram.

64. (currently amended) An optimized code generator for generating a source code stored on a computer readable medium and configured to be executed by a computer, comprising:

means for scanning the code sequence to determine a static frequency of operations in the a code sequence;

means for determining an executed frequency of operations for the code sequence: and

means for tuning an instruction set for assigning by selecting an op-code representation from a plurality of pre-determined sets to an instruction,

wherein the tuning of the instruction set is based on the static frequency of operations and the executed frequency of operations.

65. (original) The optimized code generator of claim 64, comprising a compiler.

66. (original) The optimized code generator of claim 64, comprising an assembler.

67. (original) The optimized code generator of claim 64, wherein the instruction set is a variable length instruction set.

68. (original) The optimized code generator of claim 64, wherein the instruction set is a constant length instruction set.

69. (original) The optimized code generator of claim 64, wherein a representation of operations frequency is a frequency distribution.

70. (original) The optimized code generator of claim 69, wherein the frequency distribution is a histogram.